

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2000-055715

(43)Date of publication of application : 25.02.2000

(51)Int.Cl.

G01F 23/284

(21)Application number : 11-125079

(71)Applicant : ENDRESS & HAUSER GMBH & CO

(22)Date of filing : 30.04.1999

(72)Inventor : LALLA ROBERT DR  
MUELLER ROLAND  
STRUETT BERND

(30)Priority

Priority number : 98 98108121

Priority date : 05.05.1998

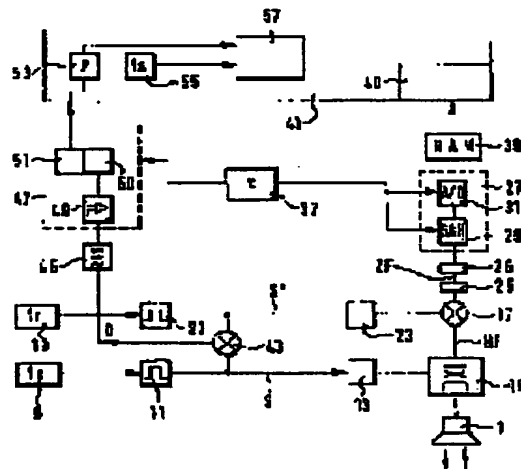
Priority country : EP

## (54) FILLED-LEVEL MEASURING APPARATUS OPERATED BY MICROWAVE

(57)Abstract:

**PROBLEM TO BE SOLVED:** To enable high-precision measurement by finding the real time-interval between a plurality of points of an echo signal corresponding to a plurality of sampling points, from a time interval produced in a unit time between a plurality of points of time of an intermediate frequency signal, using a ratio of time expansion in a unit time determined by an evaluation circuit.

**SOLUTION:** With a unit time  $\tau$  set by a clock generator 37, a sample-and-hold circuit 29 and an analog-to-digital converter 31 are clock-controlled, and digital sampled values are stored in a memory 39. A computing unit 57 is an evaluation unit 41 determined a ratio of time expansion at the unit time  $\tau$  from a period  $P$ . The real time-interval  $\Delta t$  between two points of an echo signal corresponding to two sampling points of an intermediate frequency signal ZF is found, from the time interval between the two sampling points using this ratio of time expansion.



## LEGAL STATUS

[Date of request for examination]

30.04.1999

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

3149407

[Date of registration]

19.01.2001

[Number of appeal against examiner's decision  
of rejection]

[Date of requesting appeal against examiner's  
decision of rejection]

[Date of extinction of right]